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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/663,190	09/15/2003	Kenichi Ohkubo	56232.95	1414

7590 07/07/2006

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EXAMINER
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SHOSHO, CALLIE E

ART UNIT	PAPER NUMBER
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1714

DATE MAILED: 07/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/663,190

Applicant(s)

OHKUBO ET AL.

Examiner

Callie E. Shosho

Art Unit

1714

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 01 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,3-12,14 and 16-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1,3,5-12,14,26,30 and 31 is/are allowed.
- 6) ☒ Claim(s) 16-25,27-29 and 32 is/are rejected.
- 7) ☒ Claim(s) 4 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

1. All outstanding rejections are overcome by applicants' amendment and 1.132 declaration filed 6/1/06.

In light of the new grounds of rejection set forth in paragraphs 6-9 below, the following action is non-final.

**Claim Objections**

2. Claims 4 and 25 are objected to because of the following informalities:

In order to ensure proper antecedent basis, it is advised that (i) in claim 4, line 1 before "colorant" and before "polymer", each "a" is changed to "the" and (ii) in claim 25, line 1, before "polymer", "a" is changed to "the".

**Claim Rejections - 35 USC § 112**

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 16-25, 27, 29, and 32 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 29 has been amended to recite method comprising the step of “emulsifying the dye dissolved in the polymer”. It is the examiner’s position that this phrase fails to satisfy the written description requirement under the cited statute since there does not appear to be a written description requirement of the cited phrase in the application as originally filed, *In re Wright*, 866 F.2d 422, 9 USPQ2d 1649 (Fed. Cir. 1989) and MPEP 2163. Applicant has not pointed to any portion of the specification, and examiner has not found any support for this phraseology in the specification as originally filed.

It is noted that while page 30, fourth paragraph of the present specification provides support to recite that the dye (as well as the polymer) is dissolved in the solvent, there is no support in the specification as originally filed to recite that the dye is dissolved in the polymer.

**Claim Rejections - 35 USC § 103**

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 16-17, 19-20, 24, and 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vincent et al. (U.S. 6,841,591) in view of Idogawa et al. (U.S. 5,965,634) and Matsuoka et al. (U.S. 6,074,796).

Vincent et al. disclose dispersion of colored particles prepared by dissolving polymer and dye in organic solvent, emulsifying the polymer and dye using a surfactant or emulsifier and subsequently copolymerizing the mixture with polymerizable monomer (col.6, lines 28-289 and 44-54 and col.7, lines 3-10).

The difference between Vincent et al. and the present claimed invention is the requirement in the claims of reactive emulsifier.

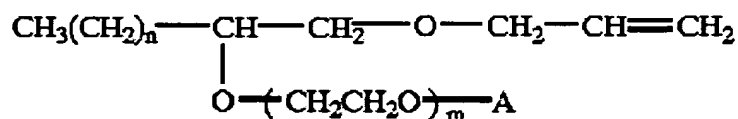
Idogawa et al., which is drawn to colored polymer particles comprising dye encapsulated with resin, disclose using polymerizable surfactant, i.e. reactive emulsifier, as opposed to using conventional surfactant when forming the colored polymer particles in order to produce dispersion with high surface tension in order to obtain ink that produces sharp images which are not blurred (col.3, lines 40-63 and col.4, line 63-col.5, line 12). The polymerizable surfactant is known under the tradename Latemul S-180 or Latemul S-180A which is identical to the reactive emulsifier utilized in the present invention. Further, it is well known, as disclosed by Matsuoka et al. (col.12, lines 40-43), that Latemul S-180 and Latemul S-180A are anionic.

In light of the motivation for using reactive emulsifier disclosed by Idogawa et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such reactive emulsifier as the emulsifier in Vincent et al. in order to produce ink that produces sharp images, and thereby arrive at the claimed invention.

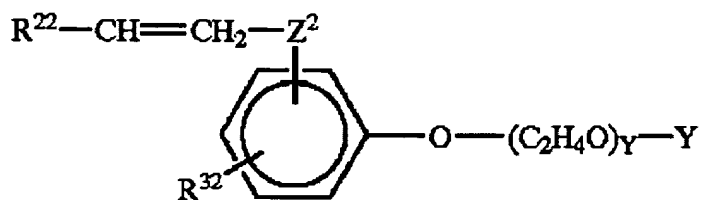
7. Claims 21-23 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vincent et al. in view of Idogawa et al. and Matsuoka et al. as applied to claims 16-17, 19-20, 24, and 28-29 above, and further in view of Nakamura et al. (U.S. 2003/0195274).

The difference between Vincent et al. in view of Idogawa et al. and Matsuoka et al. and the present claimed invention is the requirement in the present claims of specific type of reactive emulsifier.

Nakamura et al., which is drawn to ink jet ink, disclose the use of colorant encapsulated with polymer obtained from reactive emulsifier of the type:



wherein A is  $\text{SO}_3\text{M}$  where M is alkali metal or ammonium salt residue, m is 2-20, and n is 9 or 11 and which are known, for instance, under the tradename Aqualon KH-05 or KH-10 and thus, are identical to those presently claimed. Further, Nakamura et al. also disclose the use of reactive emulsifier of the type :



wherein y is 2-20,  $\text{R}^{32}$  is hydrocarbon group having 1-12 carbon atoms, and Y is hydrogen or  $\text{SO}_3\text{M}$  where M is alkali metal. The motivation for using such reactive emulsifier is to ensure excellent dispersability of the encapsulated particle and produce ink with excellent ejection stability, image density, absorbability to paper, and color developability (paragraphs 155-165 and 169).

In light of the motivation for using specific reactive emulsifiers disclosed by Nakamura et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such reactive emulsifier in Vincent et al. in order to produce ink with excellent ejection stability, image density, absorbability to paper, and color developability, and thereby arrive at the claimed invention.

8. Claims 16-20, 24, and 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ninomiya et al. (U.S. 2003/0055115) in view of Idogawa et al. (U.S. 5,965,634) and Matsuoka et al. (U.S. 6,074,796).

Ninomiya et al. disclose dispersion of colored particles prepared by dissolving polymer and dye in organic solvent, adding emulsifier, and subsequently copolymerizing the emulsified mixture with polymerizable monomer. The ratio of colorant to polymer is 1:1 (paragraphs 102-103).

The difference between Ninomiya et al. and the present claimed invention is the requirement in the claims of reactive emulsifier.

Idogawa et al., which is drawn to colored polymer particles comprising dye encapsulated with resin, disclose using polymerizable surfactant, i.e. reactive emulsifier, as opposed to using conventional surfactant when forming the colored polymer particles in order to produce dispersion with high surface tension in order to obtain ink that produces sharp images which are not blurred (col.3, lines 40-63 and col.4, line 63-col.5, line 12). The polymerizable surfactant is known under the tradename Latemul S-180 or Latemul S-180A which is identical to the reactive

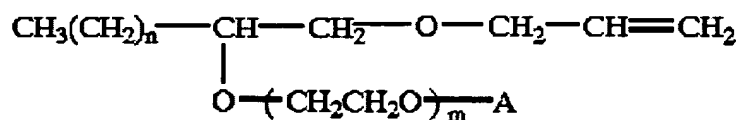
emulsifier utilized in the present invention. Further, it is well known, as disclosed by Matsuoka et al. (col.12, lines 40-43), that Latemul S-180 and Latemul S-180A are anionic.

In light of the motivation for using reactive emulsifier disclosed by Idogawa et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such reactive emulsifier as the emulsifier in Ninomiya et al. in order to produce ink that produces sharp images, and thereby arrive at the claimed invention.

9. Claims 21-23 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ninomiya et al. in view of Idogawa et al. and Matsuoka et al. as applied to claims 16-20, 24, and 28-29 above, and further in view of Nakamura et al. (U.S. 2003/0195274).

The difference between Ninomiya et al. in view of Idogawa et al. and Matsuoka et al. and the present claimed invention is the requirement in the present claims of specific type of reactive emulsifier.

Nakamura et al., which is drawn to ink jet ink, disclose the use of colorant encapsulated with polymer obtained from reactive emulsifier of the type:

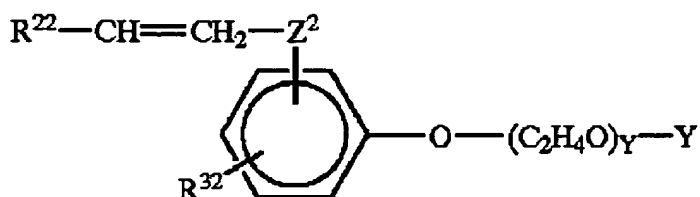


wherein A is SO<sub>3</sub>M where M is alkali metal or ammonium salt residue, m is 2-20, and n is 9 or

11 and which are known, for instance, under the tradename Aqualon KH-05 or KH-10 and thus,



are identical to those presently claimed. Further, Nakamura et al. also disclose the use of reactive emulsifier of the type :



wherein  $y$  is 2-20,  $\text{R}^{32}$  is hydrocarbon group having 1-12 carbon atoms, and  $\text{Y}$  is hydrogen or  $\text{SO}_3\text{M}$  where  $\text{M}$  is alkali metal. The motivation for using such reactive emulsifier is to ensure excellent dispersability of the encapsulated particle and produce ink with excellent ejection stability, image density, absorbability to paper, and color developability (paragraphs 155-165 and 169).

In light of the motivation for using specific reactive emulsifiers disclosed by Nakamura et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such reactive emulsifier in Ninomiya et al. in order to produce ink with excellent ejection stability, image density, absorbability to paper, and color developability, and thereby arrive at the claimed invention.

**Allowable Subject Matter**

10. Claims 1, 3, 5-12, 14, 26, and 30-31 are allowable over the “closest” prior art Vincent et al. (U.S. 6,841,591), Ninomiya et al. (U.S. 2003/0050362), and Sakai et al. (U.S. 2003/0050362) for the following reasons:

Vincent et al. disclose dispersion of colored particles prepared by dissolving polymer and dye in organic solvent, emulsifying the polymer and dye using a surfactant or emulsifier and subsequently copolymerizing the mixture with polymerizable monomer. It is further disclosed that the resulting colored particles have diameter of 50-200 nm and maximum diameter approximating micrometer dimension.

Ninomiya et al. disclose dispersion of colored particles prepared by dissolving polymer and dye in organic solvent, adding emulsifier, and subsequently copolymerizing the emulsified mixture with polymerizable monomer. It is disclosed that the particle diameter of the colored particles is not more than 200 nm and that the volume average particle diameter is 10-100 nm.

However, there is no disclosure or suggestion in either Vincent et al. or Ninomiya et al. that the peak particle diameter, which is defined as a diameter corresponding to the peak of the volume average particle diameter distribution curve (see page 42 of the present specification), is at most 50 nm as now required in present claim 1.

Sakai et al. disclose aqueous dispersion of colored particles prepared by emulsifying a mixture comprising a colorant and a polymer using a reactive emulsifier and then copolymerizing the emulsified mixture with a polymerizable monomer. However, Sakai et al. disclose the use of pigment which is in direct contrast to present claim 1 that requires the use of oil-soluble dye.

In order to meet the limitation regarding oil-soluble dye, Sakai et al. was combined with Takada et al. (U.S. 6,454,403), which is drawn to encapsulated colorant and which discloses the equivalence and interchangeability of using oil-soluble dye with using pigment.

In response, applicants filed 1.132 declaration on 6/1/06. The declaration compares ink comprising colored particles as set forth in example 1 of Sakai et al., i.e. comprising pigment, with ink comprising colored particles as set forth in example 1 of Sakai et al. but using oil-soluble dye in place of the pigment. It is shown that the ink comprising colored particles utilizing the oil-soluble dye were superior in terms of storage stability and thus, establishes that the use of pigment and oil-soluble dye are not equivalent and interchangeable. Thus, the declaration is successful in establishing unexpected or surprising results over Sakai et al.

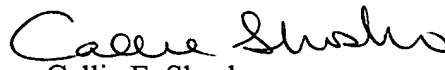
Further, while Sakai et al. disclose that the colored particles have average particle diameter less than 200 nm, there is no disclosure or suggestion that the peak particle diameter, which is defined as a diameter corresponding to the peak of the volume average particle diameter distribution curve (see page 42 of the present specification), is at most 50 nm as now required in present claim 1.

The above is especially significant in light of applicants declaration filed 6/1/06 which shows that ink comprising colored particles wherein the peak particle diameter falls within the scope of the present claims is superior in terms of ejection stability and resumption of ejection after cleaning.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie E. Shosho whose telephone number is 571-272-1123. The examiner can normally be reached on Monday-Friday (6:30-4:00) Alternate Fridays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Callie E. Shosho  
Primary Examiner  
Art Unit 1714

CS  
6/24/06